

# Advances in Cloud and Ubiquitous Computing

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## ABSTRACT

*Cloud computing provides on-demand access to a shared pool of configurable and dynamically reallocated computing resources typically located in third-party data centers. Ubiquitous computing aims at providing computing resources anytime and everywhere by using any device, in any location, and in any format. This special issue, Advances in Cloud and Ubiquitous Computing (ACUC), aims at addressing the challenges and reporting the latest research findings in the fields of Cloud computing and Ubiquitous Computing respectively, and how new technologies of Cloud Computing and Ubiquitous Computing complete each other.*

## TYPE OF PAPER AND KEYWORDS

Editorial: *Cloud Computing, Ubiquitous Computing, Cooperative Hybrid Cloud Intermediaries, Cloud Federation, Quality of Service*

## 1 INTRODUCTION

Cloud computing allows application software to be operated using internet-enabled devices. Clouds themselves are dynamic networks of common, off-the-shell computers to build computation farms with dynamic scalability features to process even big data if necessary. Ubiquitous computing is related to the ability to perform computing tasks on any type of devices (including mobile devices, sensors, smart electronic devices). Masses of devices generate masses of data to be processed somewhere - typically on themselves locally or in cooperation, or in the cloud. Cloud and ubiquitous computing have further commonalities: e.g. they enable computing anywhere; they make computing invisible and transparent; they are network-distributed computing.

The goal of this special issue is to bring together contributions from these communities to identify the

new challenges and report the research findings in Cloud computing and Ubiquitous Computing, and in their cooperation. This special issue collects high-quality papers, which report the state of art in the fields of Cloud Computing and Ubiquitous Computing, and especially demonstrating how new technologies of Cloud Computing and Ubiquitous Computing complete each other.

The open access model guarantees high visibility in the research community, usage of published results and hence may lead to a high impact. Therefore we have chosen a journal applying the open access model for our special issue "Advances in Cloud and Ubiquitous Computing". Furthermore, we attach importance to a high-quality peer-review and a journal not asking for transferring copyright but applying the license model. Hence we finally decided to choose the Open Journal of Cloud Computing (OJCC) [3], which is an open access, peer-reviewed, academic journal published by

RonPub [4]. OJCC [3] distributes its articles under Creative Commons Attribution License [1], which permits unrestricted use, distribution and reproduction free of charge in any medium, provided that the original work is properly cited.

## 2 CONTENT OF THIS SPECIAL ISSUE

All papers submitted to this special issue were firstly rigorously reviewed by at least three experts in the research areas of cloud computing and ubiquitous computing. The review reports and manuscripts themselves were then carefully evaluated by the editors, and the evaluation results were sent to the authors. All authors, whose papers were not rejected in the first round of reviews, revised their papers according to the comments in the evaluation reports. Meanwhile, the authors prepared also a revision report to describe how authors address the reviewers' concerns in the revised manuscript. Furthermore, the authors were provided with the possibility of rebuttal: authors could issue a point-by-point refutation of the comments and concerns from evaluation reports. After a careful and complete evaluation of the revised manuscripts, revision reports and rebutting letters, two papers with high-quality work have been finally accepted and included in this special issue. We will shortly summarize these two papers in the following paragraphs:

*"Cooperative Hybrid Cloud Intermediaries — Making Cloud Sourcing Feasible for Small and Medium-sized Enterprises"* [2]: The cloud provides potential solutions for addressing their IT-related challenges of enterprises. However, because of high upfront costs associated with cloud sourcing, cloud solutions have not been widely adopted by small and medium-sized enterprises (SMEs). This paper suggests an approach, a cooperative hybrid cloud intermediary (Co-op Cloud), which can reduce such upfront costs by significantly reducing transaction costs of SMEs, and thus enable SMEs to engage in cloud sourcing. In this paper, the authors elaborate their approach "Co-op Cloud" by providing precise and convincing discussions. The authors also envision different models of cloud brokering and analyze their advantages and disadvantages. We believe this article will be beneficial for substantial readers, especially for those looking for new business models and opportunities in the area of cloud computing.

*"A Trust-Based Approach for the Management of Dynamic QoS Violations in the Cloud Federation Environments"* [5]: There have been a number of research contributions on trust models in Cloud Computing, but these trust models mainly focused on

evaluating and managing the trust between cloud users and the CSPs. This work addresses a new challenge and proposes a trust-based approach to the management of dynamic QoS violations in the cloud federation, and ensures the in-time delivery of a service even when the cloud service provider does not have enough resources for the service. This paper presents a full research work: elaborating description of methods and providing extensive experimental evaluations, thorough discussions and analysis of results. This paper also contains an excellent literature survey: the related work section provides a clear overview on existing research contributions on the QoS and resource management in inter-cloud domain and the cloud federation. Cloud service providers have only finite computing resources, but customers expect a quick provision of services. We believe that this work will have a big attraction to the providers of cloud services: it enables that requests of resources can be rapidly dealt with in the cloud federation, and thus ensures the quality of services.

We wish our readers enjoyment when reading our selection of papers in the addressed research area of cloud and ubiquitous computing.

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**Dr. Sven Groppe** earned his diploma degree in Informatik (Computer Science) in 2002 and his Doctor degree in 2005 from the University of Paderborn. He earned his habilitation degree in 2011 from the University of Lubeck. He worked in the European projects B2B-ECOM, MEMPHIS, ASG and TripCom. He was a member of the DAWG W3C Working Group, which developed SPARQL. He was the project leader of the DFG project LUPOSDATE, an open-source Semantic Web database, and one of the project leaders of two research projects, which research on FPGA acceleration of relational and Semantic Web databases. His research interests include databases, Semantic Web, query and rule processing and optimization, Cloud Computing, peer-to-peer (P2P) networks, Internet of Things, data visualization and visual query languages.



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